

CLAIMS:

1. Brake application system for vehicles, particularly for rail vehicles, containing a wear adjuster which is constructed as a brake rod or thrust rod actuator and has a screw drive which has a threaded spindle and a nut which can be screwed thereto as the screw parts, characterized in that at least one of the screw parts (4) is electrically driven for the wear adjusting.
2. Brake application system according to Claim 1, characterized in that, for the electric actuating, an electric drive unit (10) is provided which consists of an electric motor (12) with a gearing (14) arranged on the output side, the gearing output of the gearing (14) being rotationally coupled with the electrically actuated screw part (4).
3. Brake application system according to Claim 2, characterized in that the electric motor comprises a d.c. motor (12), and the gearing comprises a planetary gearing (16) axially adjoining the electric motor as well as one or more gearwheel stages (18) arranged on its output side.
4. Brake application system according to Claim 3, characterized in that a clutch (52) is provided which is arranged in front of the electric drive unit (10) of the one screw part (4), by means of which clutch (52), in the event of the presence of an axial force originating from a braking, the electrically actuated screw part (4) can be non-rotatably coupled with a non-rotatable part (24) and can otherwise be uncoupled from the latter.
5. Brake application system according to Claim 4, characterized in that the clutch is formed by a cone clutch (52) having at least two conical surfaces (56, 58) which can be stopped as a function of friction against one another and are arranged obliquely viewed in the effective direction of the axial force.
6. Brake application system according to Claim 5, characterized in that one of the conical surfaces (56) is constructed on a housing (24) and the other conical surface (58) is constructed on a conical sleeve (36) non-rotatably connected with the electrically actuated screw part (4).

7. Brake application system according to Claim 6, characterized in that a threaded pin (50) of the electrically actuated screw part (4) is screwed into an internal thread constructed in a bottom of the conical sleeve (36).

8. Brake application system according to Claim 7, characterized in that a gearwheel (30) meshing with a gearing-output-side gearwheel (28) of the gearing (14) is coaxially rotatably disposed on a cylindrical projection (34) of the conical sleeve (36).

9. Brake application system according to Claim 8, characterized in that a sliding clutch (38) is arranged between the electric drive unit (10) and the electrically actuated screw part (4), which sliding clutch (38) is constructed to be slipping when stop positions have been reached and is otherwise coupling.

10. Brake application system according to Claim 9, characterized in that one stop position is formed by the application of the brake pads to the brake disc and another stop position is formed by a screwing end position, in which the electrically actuated screw part (4) is screwed into the other screw part (8) to the stop, or vice-versa.

11. Brake application system according to Claim 10, characterized in that the sliding clutch (38) is arranged between the cone clutch (52) and the electric drive unit (10).

12. Brake application system according to Claim 11, characterized in that the sliding clutch (38) contains balls (40) pretensioned by defined spring pressure in grooves, the grooves being constructed on a face of the gearing-output-side gearwheel (28), and the balls (40) being held in bores (42) of a ring (44) non-rotatably held on the cylindrical projection (46) of the conical sleeve (36).

13. Brake application system according to Claim 12, characterized in that, at least during the electric actuating of the one screw part (4) in one rotating direction for the wear adjustment, the other screw part (8) is held in a non-rotatable manner.

14. Brake application system according to Claim 13, characterized in that the other screw part (8) of the screw drive (2) can be rotatorily driven for the emergency and/or auxiliary release of the brake.

15. Brake application system according to Claim 14, characterized in that the other screw part (8) is coupled with rotary drive (88; 112) for the emergency and/or auxiliary release by means of an unlockable free wheel (74) which, on the one hand, permits a rotation of the other screw part (8) by means of the rotary drive (88; 112) in a direction against the wear adjustment and, on the other hand, is constructed for blocking this rotation if it is not caused by the rotary drive (88; 112).

16. Brake application system according to Claim 15, characterized in that the electric drive unit (10) of the electrically actuated screw part (4) is actuated independently of the rotary drive (88; 112) of the other screw part (8).

17. Brake application system according to Claim 16, characterized in that the rotary drive (88; 112) is designed to be remotely or electrically actuated directly by hand by way of a Bowden cable.

18. Brake application system according to Claim 17, characterized in that the other screw part (8) is coupled by way of a sliding clutch (70) with the rotary drive (88; 112) and has an application surface (68) for the application of a rotating tool.

19. Brake application system according to Claim 18, characterized in that the electrically actuated screw part is formed by the threaded spindle (4) and the other screw part is formed by the nut (8).

20. Brake application system according to Claim 19, characterized in that the unlockable free wheel is formed as a wrap spring free wheel (74) between a cylindrical wall (100) of a non-rotatable part (26) and a sleeve (72) rotating along with the nut (8).

21. Brake application system according to Claim 20, characterized in that another free wheel (140) is provided between the drive unit (10) and a non-rotatable part (24) which permits only a rotation of the drive unit (10) in a direction in which the thrust rod actuator (1) is lengthened.